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# Teacher-researchers Exploring Design-based Research to Develop Learning Designs in Higher Education Language Teaching

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*Due to constant changes and developments of the 21st century societies and working life, the environments in which learning takes place have changed. Novel ways to research learning in those environments and to explore how learning could be supported with the learning design are needed in order to bring about changes in teaching practices. One of those ways could be design-based research (DBR), an iterative, interventionist and flexible research strategy, which would allow cycles of developing theory of learning as well as implementing design principles in practice. This article describes how we, as teacher-researchers, have adopted a design-based research approach in two separate studies in order to examine learning in authentic contexts in our own work as higher education language teachers. In the first stages of applying the strategy, we are exploring how our current designs work. The data for this exploration was collected from English for Academic Purposes courses in the form of videoed lessons, reflective diaries, interviews, questionnaires, course assignments and feedback to document the designs as well as the learning processes. Through this, we hope to shed light on the affordances that are central in terms of learners' agency in shaping their own learning paths, and communicating their expertise through language on these example courses. This knowledge could then be utilized in developing an improved learning design. Despite the challenges of implementing this multifaceted approach, design-based research could have potential to provide new insights into learning and teaching and in that way also affect educational practices.*

*Keywords:* agency, expertise, affordance, English for academic purposes, design-based research

## 1 Higher education language learning and teaching in the 21st century

University studies prepare students to become academic experts for the labour market, and higher education language teaching shares this goal. Increasing internationalisation and developments in technology, societies and working life have changed the environments in which languages are used and in which

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learning takes place. This causes pressure to develop higher education language teaching so as to keep up with the changes. Future work will be knowledge intensive and characterised by flexibility, innovations and team work. Studies and reports on future needs and requirements of academic graduates indicate that in addition to field-specific knowledge, academic graduates should learn all kinds of ‘soft’ skills, such as scientific thinking, critical skills, tolerance of ambiguity, team-working and networking skills, creativity, confidence, good communication skills, and willingness to engage in lifelong learning (Launis & Engeström 1999; Hakkarainen et al. 2004; Sawyer 2006; Archer & Davidson 2008; Tynjälä 2010; Juva & Hynynen 2011).

A certain number of language and communication studies are included in all university degrees in Finland and those studies are provided by university language centres. The primary aim of language and communication studies is to enable students and staff to become convincingly communicating experts in their own fields and to be able to cope with international and intercultural contexts. A significant focus in language centre teaching is also on supporting students’ independent learning skills to enable life-long and life-wide learning. (Strategic document of the University of Jyväskylä Language Centre.) To meet the needs of the 21st century societies and working life, we, as language educators at higher education level, have wanted to respond to the challenges presented for our work. The problem, however, has been that even though the needs are generally understood, previous research has shown that changing existing practices can turn out to be difficult or that the change has been slow (Reeves et al. 2011: 56; Ruohotie-Lyhty 2011: 365). This article introduces two individual studies which seek to develop learning designs to support two focus areas of language centre teaching, namely, students’ growing to become academic experts and agents of their own learning. We have adopted a design-based research (DBR) approach for these studies, as a promising way to study learning and teaching in complex social situations. In the first stages of applying this approach, both studies identified some key features of the learning designs which could be meaningful in terms of learner agency and communication of expertise. The findings based on qualitative content analysis (see e.g. Dörnyei 2007: 245–257; Eskola & Suoranta 1998: 137–188), and discourse analysis (see e.g. by Potter & Wetherell 1987) are reported in the present article, preceded by a brief introduction to the theoretical foundations of DBR in the present context.

## **2 Design-based research approach to explore learning designs**

Drawing on Conole (2012), we use the term *learning design* to refer to designs for learning that are “edagogically informed”, that attempt to make “effective use of appropriate resources and technologies” (ibid.: 7) and that are enacted (Lund & Hauge 2011: 262) on our example courses. By adopting a DBR approach, we aim to study the processes related to those learning designs. DBR (also referred to as design experiments, design studies or design research), is a new research strategy or research approach, which emerged in the 1990s in the interdisciplinary field of the Learning Sciences. Wang and Hannafin (2005: 6–7) define *design-based research* as:

a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories.

One of the central features of design-based research is that it has both pragmatic and theoretical goals. DBR is interventionist and aims at bringing about change in educational practices. The aim is to design artifacts and learning environments, and to create theory about both the process of learning and of the means that are designed to support that learning (Cobb et al. 2003: 9–13; The Design-Based Research Collective 2003: 5; Wang & Hannafin 2005: 5). Learning is studied in teams of researchers and practitioners in authentic, real-life settings, which are often complex and “messy”. Educational innovations are introduced into these real-life contexts, which opens up a possibility to study a change or the effects of the intervention in that context. The idea is that in order to study learning, it cannot be isolated or separated from its context.

The DBR process is often described as cyclical and iterative (Wang & Hannafin 2005: 8). During the research cycles, the problems or focuses, solutions, methods and the innovation or the design principles which are being developed are designed, tested and developed further, based on the increasing knowledge (Amiel & Reeves 2008: 35). The outcomes of these cycles include a better understanding of the learning process and, through that, an improved design to support that learning process. These results will then be shared with other practitioners. Finally, DBR is dynamic and flexible, which means that the research problems and focus areas often emerge from the data and, therefore, it is possible to change the research foci, the intervention, or the research context during the research cycles if needed. Because of this dynamic nature, it is important that the research process, findings and changes to the initial plan are systematically documented (Wang & Hannafin 2005: 8).

The results of previous DBR studies have been artifacts, such as software or a virtual learning environment, and activity structures, frameworks, pedagogical models, scaffolds or curricula that incorporate the use of that artifact, or theory about learning and teaching in naturalistic settings (Edelson 2002: 106; The Design-Based Research Collective 2003: 5–6; Barab & Squire 2004: 2; diSessa & Cobb 2004: 98). In Finland, several DBR studies have been published in the fields of education (e.g. Kettunen 2010; Lakkala 2010) and educational psychology (e.g. Muukkonen-van der Meer 2011). A lot of previous DBR seems to have been done on the learning and teaching of natural sciences (Aksela 2005; Juuti 2005; Nieminen 2008), on the application of some recent learning theory (e.g. self-directed, problem-based, collaborative or meaningful learning), on the use of technology (such as the use of digital videos (Leinonen 2007)), or on virtual learning environments (Kärnä 2011). Still, very little DBR has yet been done in the field of language learning and teaching (apart from Vigmo (2010) and Pardo-Ballester & Rodríguez (2010)). Our studies attempt to fill the research gap of DBR in language learning and teaching, adding the context of Language Centre teaching and the focus of English for Academic Purposes (EAP) to this.

The learning designs of the case studies introduced in this article build on sociocultural, situated and ecological views on language learning. The sociocultural view sees knowledge as changing and socially constructed, with

learning taking place in the discursive interactions of communities, as the process whereby the individual is enculturated in the culture and institution (Lave & Wenger 1991; Tynjälä 1999; Lantolf 2000; Hakkarainen et al. 2004). This view of language learning aligns with the DBR approach because learning is studied in DBR within social interactions that take place in complex real-life contexts. The ecological view, then, adds to this the idea that the learner interacts with the environment and uses the opportunities provided by the environment for learning (van Lier 2000: 246–247). Those opportunities are called affordances, which according to Gibson (1986: 127) refer to what the environment “offers the animal, what it *provides* or *furnishes*, either for good or ill”. Affordances are perceived and actual properties of objects, which determine how the object can be used. As such, they can mean both opportunities and constraints (Norman 1988: 9; Hammond 2010: 206; Conole 2012: 89). Affordances emerge or realize when they are perceived by the learner, and the learner’s past experience, values, skills, actions, wishes and thoughts determine what he or she perceives to be an affordance (Norman 1988: 9; van Lier 2000: 252; Hammond 2010: 216; Conole 2012: 86). In fact, affordances are not only qualities of the learner or of the environment or object, but they are “actionable” (Norman 1999: 39) properties or relationships between the environment/object and the user who acts on the object (van Lier 2000: 252; Hammond 2010: 205). Following this, the present article examines two case studies which seek to identify such opportunities and constraints for learning on language courses.

### **3 Learning design for communicating expertise on an EAP course**

The first case study focuses on the communication of expertise, which is a crucial skill academic graduates should have when they enter working life. Expertise is often described as consisting of three (Tynjälä 2008a: 125–126; 2008b: 144–145) or four (Tynjälä 2010: 83) elements: theoretical (e.g. “book” knowledge gained from formal education), practical (e.g. practical or tacit skills gained from work experience), self-regulative (e.g. awareness of one’s strengths and weaknesses, reflective skills and self-directedness) and sociocultural knowledge, which are all closely intertwined. Expertise has been studied as progressive problem solving (see e.g. Scardamalia and Bereiter 1999) and as increasing participation. Following Lave and Wenger’s (1991) concept of communities of practice, university students grow to become academic and field-specific experts while taking part in the interactions of the communities they are part of for example as university students, students of a particular faculty, or junior professionals of their fields. In the present study, experts are understood to be people who have a wide knowledge base and the ability to solve complex problems, who take part in the social processes of creating new information, and who keep up their expertise through lifelong learning (see Eteläpelto & Tynjälä 1999; Hakkarainen et al. 2002; Hakkarainen et al. 2004; Ropo 2004; Sawyer 2006; Tynjälä 2010). Language and communication skills are also generally considered to be a part of experts’ repertoire, but usually it is not specified what those language and communication skills are (Kostiainen 2003: 33). The aim of this ongoing study is to examine how university students communicate expertise through language on their EAP courses, focusing on what dimensions their

expertise contains, and how it is manifested in the micro-level interactions of the course.

In the first cycle of the study, data was collected from Bergroth-Koskinen's 32-hour EAP course. Students were all from the Faculty of Sport and Health Sciences, holding a Bachelor's degree, and currently studying to become physical education teachers at Master's level. The median age of the students was 25.5 and group size was 12. The assignments on this compulsory course were designed to prepare students for their Master's Thesis research, and thus, for example, academic reading strategies and critical reading were included in the syllabus. The main focus of the course was, however, on spoken academic English, and the course was also designed so that it would give students opportunities to practise communicative tasks which are typical in working life in their field. Because of that, an academic presentation and a more practical demonstration were included as learning assignments.

The data can be divided into three main types. First, it contains all material related to the existing design, such as the course description with the expected learning outcomes, all course material (handouts, slides), and lesson plans and other documents related to the planning of the course. Second, it contains data collected during the course, including videoed lessons, e-mails, all students' course assignments, and teacher and peer feedback on the assignments. Third, the data includes reflective documents, such as student feedback on the course and student answers to a questionnaire submitted at the beginning and the end of the course, as well as the teacher's reflective diary.

The starting point for the data analysis was the teacher-researcher's observation that the course was not as successful as it was hoped. This was manifested by the students not seeming to be as motivated in the course, and not completing the course assignments as well as the students in parallel groups of the same course. Many students also gave negative feedback on the course. Thus, the analysis started by looking into potential reasons for the mismatch between the existing learning design and the expectations of this group of students.

Anonymous course feedback and the teacher-researcher's notes on the course indicated that the main learning assignments and class discussions were important features in the existing learning design from the point of view of the research questions. The main learning assignments were mentioned in the course feedback both as tasks that worked well and as tasks that could be further improved. For example, most students mentioned that they had learned academic reading strategies and academic vocabulary and had found the related activities useful. However, some students said that the academic reading tasks of the course did not match their level or expectations (*"I thought we would discuss more on the course and read more academic texts"*<sup>1</sup>; *It was the same level as our BA level English course so it felt frustrating to do the same things because there wasn't much new*<sup>2</sup>). In addition to reading, many students commented on the oral activities. They had liked the communicative tasks and the presentation, and thought that the practical demonstration improved their instructional skills in English. In the end, most students wished that there had been even more group work and oral activities on the course (*"I think we could have had more group-working."*; *"You learn by doing=conversations!"*). All in all, the feedback was rather mixed: some students would have wanted more and some less of the same course content. For example, some students found the course assignments

relevant for students from their field, whereas others pointed out that some topics of the course assignments were not relevant for physical education teacher students (“*I think [--] many of the topics have been too general or too specific. Assignments are OK and most of the good, but the content of them haven’t been useful in our field.*”). Specifically, many students said in the course feedback that they would have wanted to have more discussions or debates on field-specific topics.

One possible reason why all students in this group were not able to perceive the opportunities available to improve their academic communication could be that their expectations and wishes for the course before it started were different from the official learning outcomes. Student background affects how they approach the course, and therefore the beginning of the course was identified as a critical phase in the learning design (cf. the second case study in this article). The students in this particular group, who had a previous Bachelor’s degree, probably had a clear image of what “their field” is and also what an “academic” course should be like – even though it was not explicated in the lessons or in their questionnaire responses. The lessons on academic study strategies, features of academic presentations and academic vocabulary were designed to support the development of their skills in communicating academic expertise, but many students commented at the end that they had expected something else: “*I expected it [=the course] to be more academic.*” This suggests that the students may understand the term ‘academic’ differently from the teacher. The perceptions of the terms ‘academic’ and ‘expertise’ emerging from the perspectives of the student, the course and the teacher will be explored in more detail in the further stages of the study. The implication for teaching seems to be that student expectations, learning outcomes, and important terms need to be negotiated at the beginning of the course.

From the teacher’s perspective – and also quoted in several student responses – student performances on the course were academic in many ways. Through engagement in the learning assignments, students were able to display multidimensional academic and field-specific expertise. First of all, student performances on the course included theoretical field-specific knowledge: “*it [=expertise] was seen in the presentations, demos and discussions. They were of high quality and they often showed that we know a lot about our field.*” Moreover, in the presentations and field-specific demos, students demonstrated having practical knowledge of how to function as members of communities of practice of university students or as future physical education teachers. In other words, students showed in their presentations academic and field-specific expertise with their actions and language use. They had followed the guidelines given by the teacher, and thus, the presentations were structured following academic conventions (introduction – main body – conclusion), and conventional vocabulary was used. The following data excerpt is an illustration of a student presentation, in which the presenter signals to the audience that she knows how a presentation should be structured for example by saying (in line 1): “*may I have attention*”, “*I’ll give you presentation*” (in lines 1–2) and “*at first we’ll do*” (in line 4). In the example she also shows her knowledge of the academic presentation genre by using academic (e.g. *attention, introduction*) and field-specific words (e.g. *adapted physical activity*).

- 1 Katja<sup>3</sup> okay *may I have attention my name is Katja and I'll give you*  
 2 *presentation about my topic that is person centered thinking in*  
 3 *adapted physical activity and now you may ask what I'm going to*  
 4 *tell you and at first we'll do some warm-up exercise so it will be*  
 5 *as my introduction to my topic and here comes instructions*  
 6 *((displays a slide with the task instructions)) first pick a pair and*  
 7 *just we'll spend one minute so let's do it quickly and then choose*  
 8 *the roles one is PE teacher and other is pupil and first point*  
 9 *teachers please go outside of the class*

It seems that these students' general perception of language use and learning is very practical, as illustrated by the feedback quote: *"you learn by doing = conversations!"* Several students commented in their feedback questionnaires that they learn best when working with other people (*I like interactive learning, group work, discussions etc. That is also how I learn better.*) This strong emphasis on learning as social activity could be an aspect of expertise of students at this particular faculty, or an indication of knowing what effective learning is like from future teachers' perspective. The instructions for the presentation of the course required the presenter to encourage discussion with the audience at the end, as is typical in conference presentations. However, in this group, several students had devoted time for small group discussions in the middle of their 20-minute presentation, and the fact that they modified the task instructions for their own purposes like this shows how important they consider audience activation. The data excerpt above is from the beginning of Katja's presentation and it shows that the presentation starts with an interactive exercise. The data excerpt also illustrates her practical knowledge of how to manage a group and how to keep the audience motivated, which are crucial elements of physical education teachers' expertise. She gives instructions clearly, and in doing so uses ways of speaking typical to teachers (e.g. *"first pick a pair"* and *"we'll spend one minute"* in lines 6-7 and *"teachers please go"* in line 9). Furthermore, the importance of the practical element of expertise is visible in the course feedback where many students explained that when planning the presentation and/or the practical demonstration, they had focused on *"teacher skills"* such as clarity, illustration, and audience rapport (*[when planning the presentation I paid attention to] clarity of speech and structure, creating interest; illustration & concrete examples, working methods, motivation, time management*).

Teacher and peer feedback on the presentations focused on content, structure, language, audience awareness, non-verbal behaviour and voice, which means that the elements of expertise which appeared in the presentations were addressed in the feedback. However, as the feedback covers this wide range of dimensions of presentation expertise, the teacher's challenge in her evaluation is how the different elements should be evaluated and weighted? For example, the data excerpt above shows that the student makes grammar mistakes but succeeds in communication, in other words, she appears as a good physical education teacher, but not necessarily as an expert in language accuracy. This example shows that multiple layers of expertise are overlapping and intertwined, as pointed out for example by Tynjälä (2008a: 125-126, 2008b: 144-145, 2010: 83), and this phenomenon needs to be explored in more detail in the further stages of the study.



After the course, the learning design was developed by suggesting potential solutions to the critical phases identified in the analysis. Students' background was taken into account more carefully at the beginning of the new course by creating a pre-course questionnaire, in which the students could tell about their previous studies and work experience, assess their skills, and set personal goals for the course, which would allow the teacher to modify the tasks for the target group if needed. The plan was to discuss students' background and career plans, relevance of the course and relevance of English in their studies and future career in the first face-to-face lesson in order to motivate students and to prevent possible mismatch between their expectations and the learning outcomes of the course. Some tasks and activities were changed or left out to raise the academic level of the course and to save time for oral activities in class. The emerging view of expertise of students in this faculty was taken into account by adding field-specific oral activities based on academic articles or field-specific online discussion forums, and the instructions for the presentations were modified so as to allocate more time particularly for interaction with the audience during or after the presentations.

The new design was implemented in a course for a similar target group in the following semester but the data collected after the implementation of the changes has not been analyzed yet. The next research cycle will continue to examine those critical phases of the learning design which emerged as important from the point of view of communicating expertise. The focus will be on observing the effects of the changes in their context, in other words, whether the tasks of the new design will work better and in what way, and whether the critical phases, which afforded or constrained learning in the first cycle, will stay the same when the design is changed. That information will then be used to create further learning designs with which communicating expertise could best be supported.

#### **4 Evolving learning paths as emerging agency on an EAP course**

The second example of applying the DBR approach is based on the first cycle of Seppälä's ongoing study, focusing on learner agency. Using data collected from the researcher's own EAP course, the study aims at exploring how learners exercise their agency on the course in order to support it better. Agency in language learning has been a focus of several recent studies (e.g. Flowerdew & Miller 2008; Murphey & Carpenter 2008; Kalaja et al. 2011). It has been recognized as having a central role in the learning process, but the nature of that role is not yet fully comprehended. In this study, agency is understood as the dynamic, socioculturally mediated way in which learners construct their own learning paths (Ahearn 2001; Lantolf & Pavlenko 2001; Lantolf & Thorne 2006; van Lier 2008). Rather than being a fixed, internal attribute, agency is seen as evolving and emerging in different ways in learning situations. Due to this multidimensional nature of agency, diverse data (e.g. questionnaires, interviews, course materials, videoed contact lessons, learners' texts and teacher's feedback, learners' blogs, emails, teacher-researcher's reflective notes) was collected to be able to grasp its different manifestations on one course.

The focus of the first stage of the research was on individual learners' goals - what kind of goals were set (if any), if and how those goals changed and whether the learners felt at the end that they had reached their goals. The types of data that were utilized in this first stage were questionnaires that the learners filled in before and at the end of the course, learners' goal-setting entries in their blogs and interviews of seven learners after the course had been completed. Thus, it was seen that focusing on the learners' descriptions of their own goals and reflection on their own learning could give insight into the interrelationship between agency and learning in this context. The interest to explore this derives from the ways in which initiative and intentionality have been described in definitions of agency (e.g. Lantolf & Pavlenko 2001; Hunter & Cooke 2007; Kalaja et al. 2011; Lipponen & Kumpulainen 2011) and the role of learners' own goals in them.

The data was collected in an elective EAP course, which focuses on academic writing as well as on learners' personal language learning beliefs, preferences and experiences. The course combines contact lessons (16 hours) with distance work, facilitated by a virtual learning environment. The main assignments of the course include reflective tasks related to language learning, academic writing tasks of various types, an independent learning project planned and implemented by the learners themselves and an oral presentation. As the course is an elective course open to students of all faculties, the group in the study was a mixed group of students from different fields. Most of them were second, third and fourth year students and had already taken the compulsory language courses. All the students agreed to take part in the research and 26 students completed the course. No major changes were made in the design of the course before data collection, apart from regular updating of the course workspace in the learning environment and some modifications in the tasks.

Analysis of the chosen data types revealed some critical aspects related to learner agency. First of all, learners' reasons for attending the course were asked with the help of a questionnaire before the course began. Teachers' general assumption is probably that in an ideal situation students would, after having taken their compulsory language courses, select elective courses based on their individual learning goals and needs, thus exercising their agency to construct a relevant learning path for themselves. However, the questionnaire responses revealed that this was not the case. The need for language credits for their degree and the blended format of the course with only a few contact lessons were among the learners' main reasons for choosing the course (Siiri<sup>4</sup>: "*I needed to have the language credits*"<sup>5</sup>; Jaana: "*I noticed that this is a course that I could do mostly independent which suits me now very well*"). The students also had various practical explanations for their choice, for example, life and work situations (Kaisa: "*Due to my part-time job I don't have the possibility to participate in lessons every time*") or a busy schedule. Based on the answers, even though the course was elective, the decision still seemed to be a forced one to some extent: Heta: "*I had to*"<sup>6</sup> *find a course that fitted in my compulsory language studies*". Some learners mentioned reasons and expectations related to language learning (Meri: "*This course is good for me because I want improve my English writing*"; Veera: "*I hope the course will support my other university studies and improve my English skills, especially in academic communication*"). However, these often seemed to be secondary reasons, which were not described in detail (Kaisa: "*I registered for this*

*particular course because the course seems interesting*"). In addition, it is difficult to tell whether the learners had truly considered these goals when registering for the course or if the questions of this pre-assignment had just forced them to ponder on those. Some learners did mention that answering the questionnaire triggered the process, indicating that the pre-assignment itself had an effect on the learners' goal-setting: Jonna: *"I registered to this course because I needed the credits for English courses in order to graduate on time. This course was one of the few that fit into my schedule. Now as I'm writing this I find myself also motivated to learn more and improve my english skills"*.

Bearing in mind the motivational aspects related to learning, the starting point for the course did not seem to be particularly promising. There was a mismatch between the learners' goals and the general goals of the course, which would surely have an effect on individual learners' paths. Most learners' primary goals were not directed at learning, but, rather, at meeting the compulsory requirements of their degree. In that sense, at the beginning, the main advantage of the course for the learners was its blended format, which enabled them to attend it in different life situations. As far as learner agency is concerned in such a case, the purposeful action of the learner might be very performance-focused, i.e. only to complete the necessary tasks – which might hinder learners from benefiting from affordances for learning. What is needed to make learning meaningful is true ownership of one's language learning related goals and their relation to one's wider learning path.

Once the course started, all learners were asked to write personal course goals for themselves in their blogs. At this point, they had more information about the course content and everyone formulated some learning-related goals. For example, one student's, Sonja's, goals were related to reading and academic writing: *"Learn to read English text more fluently, Learn to write better academic text in English -> I have to pay attention to writing more formal words and using articles"*. Some goals were related to the learners as language users (Veera: *"Improve my self-confidence concerning academic communication in English"*). For some learners, the goals were now more specific and focused more on the themes of the course (Kaisa: *"learn how to be more precise when writing in English"; "learn how to conduct my own learning process"*) than their initial reasons and expectations (*"the course seems interesting"*). At this point, Meri also specified her goals – she referred to the academic writing criteria that were introduced in class and used them for defining the target level for her academic writing (*"I try improve academic writing skill. I try to get all five criterion at least B2 level."*). Veera mentioned the fact that she would possibly write her master's thesis in English as her reason for improving her writing (*"Improve my writing skills so that maybe it will be possible to write my master's thesis in English."*). Thus, instead of or alongside their original reasons for registering for the course, the learners now described their own expected learning and development in the context of this particular course. The answers differed more from one another than the initial reasons, suggesting different focuses for the learners' paths. However, it is also possible that instead of or in addition to expressing the learners' true personal learning goals, the answers were constructed to build a picture of an ideal learner. The learners now knew about the focuses of the course and might have formulated their goals to match those. For example, Kaisa's goal of learning *"how to conduct my own learning process"* is very close to one of the official expected learning outcomes of the course description (developing skills in *"managing and directing [students']*

own learning”), suggesting that rather than reflecting true ownership of one’s own learning on the course, the goals might be merely repeating given learning outcomes.

At the end of the course, all learners filled in a questionnaire, looking back on their course experiences. In those reflections, some kind of turning points or changes in the learners’ attitude, thinking or actions were described. Meaningful experiences related to the goals they had set for themselves had been recognized: Meri: *I now know what academic writing is and what kind of text types there are*<sup>7</sup>. The learners also described themselves as being more comfortable and confident in using the language (Kaisa: *After the course I believe in myself more as an academic writer, also in English*; Sonja: *Now I have more confidence in myself in using English*). Thus, instead of the credits they would get for their degree, the learners described resources they had for their own language use. However, many answers were still rather vague (e.g. Sonja: *Especially academic writing in English has improved!*; Kaisa: *About scientific writing in English I have certainly learned*), lacking a deeper level of description of what those revelations truly mean and how they show in different situations.

To find out more about these learner experiences, the interviews of seven learners were studied in more detail. In them, the learners described – through concrete examples – how they now felt more confident in their own ability to cope and function in different language use situations than before. Many realizations were related to their own goals, and they were presented as their own, something that the learners themselves had noticed and experienced. Sonja referred to reading and writing, which she had set as her goals: *at some point I noticed that [reading] is easier -- I do not have to stop and think any more -- and it has helped in many things -- when the other English course began -- I was able to begin writing immediately*. Sonja also described feelings of accomplishment: *that I was able to do that three-page essay in English -- and the feeling that I was able to complete it*. Meri’s goal had been to be able to write better and she also described her accomplishments in it: *writing has become more fluent -- it was so slow and difficult at the beginning so I have noticed a huge development in that -- I had gained courage in writing before I started the other English course -- I realized that -- these tasks are not too difficult for me and that I am able to complete them without major difficulties*. Sonja and Meri also referred to concrete situations in which they had noticed their progress or in which the themes of the course had proven useful in other contexts outside the course (Sonja: *perhaps it encouraged me to use English sources -- also in a Finnish thesis*; Meri: *here -- we went through how to write a research paper and when I had to do that on another English course it helped me so much*).

The analysis indicated that although the learners’ initial reasons for taking the course were mostly related to the credits and the format of the course, it did not hinder them from formulating goals for themselves and later reflecting on reaching those goals. The learners seemed to have created individual learning paths and, for example, Sonja and Meri described their own experiences in relation to their own goals quite consistently. In that sense, the learners’ agency to pursue their learning-related goals within the frames of this course seems to have emerged, or, rather, evolved in their own descriptions as the course proceeded. They referred to certain learning experiences, for example, to new revelations about themselves, what they can do and how they see themselves –

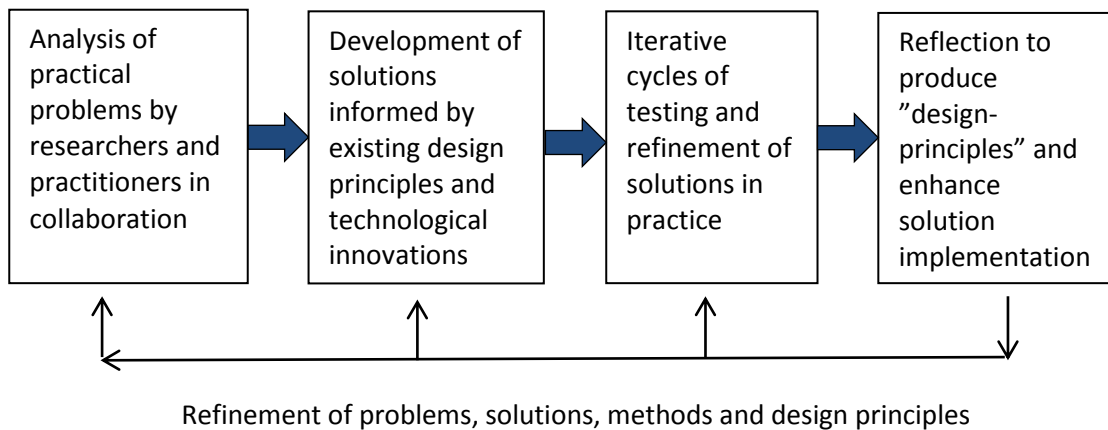
new resources for their language use. In that way, the course was described as a part of the wider learning path of the learners.

Nevertheless, the first stage of the analysis reinforced the conception that these learner descriptions provide only one – although important – perspective into learner agency and that perspective alone gives too narrow a picture of the phenomenon. If agency is understood as a multidimensional concept, it suggests that these goals and learner actions taken to reach them need to be explored from other perspectives as well. Were the general learning outcomes and the learners' own goals in any way aligned? Were the goals the learners' own goals or did they represent the ideal picture that they thought was expected? What kind of agency do these different possibilities reflect? What could be seen as a true manifestation of agency and how does it show in other types of data (e.g. learners' blogs, videoed lessons)? These questions will be explored in the next stage of data analysis.

Although more work needs to be done to uncover the different dimensions of agency, one concrete change was already made in the course for the second cycle. Based on the analysis, agency in the learners' own words was made explicit, for example, through different possibilities for reflection along the learning path. The learners were asked to formulate their goals as a part of the course, and reflective tasks were included in the actual course materials. However, the questionnaires and interviews related to the research could also be seen as tools for making the learners' own goals and learning tangible as they enabled descriptions of specific situations in which their progress showed. Thus, in addition to being research tools for the researcher, they also made it possible for the learners to explicate their experience and make it more personalized. This idea of a concrete learning path with particular points of reference through reflection was developed further for the design of the second cycle. For example, in the first cycle, these kinds of possibilities for reflection were scattered in various places: questionnaires, interviews and learner blogs. To make the learning path more continuous, process-like and visible, a "course path" document was created for each learner in the learning environment. In that document the learners were asked to record their personal course goals at the beginning of the course, and checkpoints to revise those goals during the course were added. In addition, a more consistent dialogue between the learner and the teacher was enabled with this tool as the learners were able to request what kinds of aspects they would particularly like to have feedback on in their assignments. During the course the teacher was able to give individualized advice on different tasks in the same document. Systematic reflection, feedback and dialogue were hoped to prompt and support the negotiation of the learners' goals so that they would truly be their own. Further analysis of the DBR cycles will show whether this happened.

## 5 Evaluating DBR from the teacher-researchers' perspective

The two case studies presented above describe the first steps of a DBR process. Following the 4-step model of Reeves (2006: 59) shown in Figure 1 below, we would position ourselves in the first step of the process, i.e. analysis of practical problems.



**Figure 1.** Design research (adapted from Reeves (2006: 59))

During this first stage, then, data was collected and analysed in both case studies. As a result of the analysis, some critical phases from the course paths were identified in terms of the opportunities and constraints for learning related to the focus areas of the studies. The next cycles of the studies will continue to examine these critical phases in order to gain a better understanding of the phenomena which emerged from the data, and to formulate practical design problems. After that, theory-driven solutions to these practical problems will be drawn, and the solutions will be tested, evaluated and developed further. During the iterative testing stage, the studies will focus on the processes taking place in the course from the perspectives of the learner, the teacher and the course itself. Studying the teacher-researcher's own experience as one data type will add elements of autoethnography (see e.g. Ellis & Bochner 2000) to our research designs. By shifting the perspectives, and by combining the three lenses in the end, we aim to see a comprehensive picture of what happened on the course, and what aspects of the learning design can be affordances for learning. Finally, all the research cycles will be reflected upon in order to produce workable design principles. In practice, however, DBR is often a long process, and the steps might not follow each other as straightforwardly as in the model above. Several steps of the study can be simultaneous and overlapping, and problems, solutions, methods and design principles are being refined continuously (Reeves 2006: 59). DBR studies always generate new theory also about the research strategy – for example, a novel conceptualization and description of the research process.

DBR has been criticized for many of its central features. First, the flexibility of this approach, which allows for the research methods and the focus of the study to evolve over time, can be seen as a weakness because focussing the topic

and reporting the study may become complicated and even lead to biased conclusions (Dede 2004: 106; Juuti & Lavonen 2006: 63). Moreover, DBR studies raise similar issues of trustworthiness to most qualitative research. As demonstrated by the various datasets of the case studies presented in this article, DBR studies often use triangulation: various methods and data from multiple sources to increase the objectivity, validity and applicability of the findings (Wang & Hannafin 2005: 10). The practice of collecting large amounts of data and using multiple methods, however, has also been seen as a drawback of the approach. Collecting, analyzing and combining different types of data require a wide range of methodological skills, and if the data is collected or analyzed carelessly, the trustworthiness of the study can be compromised (Juuti & Lavonen 2006: 63). Therefore, the DBR process should be evaluated using the criteria of specific data collection or data analysis methods (e.g. interview or discourse analysis) (Juuti & Lavonen 2006: 65). Using a great deal of data and multiple methods also means that DBR studies often take a lot of time and are laborious, which can be seen as a further drawback.

The strong role of the researcher in the intervention and the research process in DBR can sometimes be seen as problematic (Kelly 2004: 124), but we believe that this setting has many advantages. Our experiences from the first cycles of DBR as teacher-researchers show that it is possible to combine hands-on teaching with scientific research. We believe that being able to take a very close look at the planning and implementation processes of the learning designs, as well as the learning situations, is actually an advantage. The teacher-researcher's ethnographic experience can help plan the research design and anticipate where design problems can be found. Furthermore, as teachers we have the opportunity to transfer the newly acquired knowledge into our practices immediately. In practice, however, it has not always been possible to separate the roles of a 'teacher-self' and 'researcher-self', because the two roles are simultaneous and overlapping. In fact, during the data collection, we often experienced such engagement in the teaching and interacting with the students that we did not even have time to mind the presence of the video camera or observe the class from a researcher's point of view. Neither did the students seem to mind the presence of the video camera in the lessons. Perhaps one further advantage of being a teacher-researcher is that there are no outside observers in the class drawing the attention away from studying.

We learned that there are also extra challenges in studying one's own course. The teacher-researcher has to be prepared to assess the course as it was, and that brings the topic very close to self. The teacher-researcher has to be prepared for various feelings (e.g. disappointment) when studying the implementation of the learning designs created by him/herself. Openness, integrity and a good working ethics are required to be willing to acknowledge, document and publish both successful and unsuccessful designs. In DBR the researcher needs to stay open for whatever emerges from the data, especially when studying opportunities for learning, constructed in different ways with different learners. We believe that acknowledging both successful and unsuccessful elements of the learning designs is a significant step towards being able to make real, in-depth changes in educational practices.

One very rewarding experience in our endeavour was that we noticed that our understanding of this research strategy increased methodologically during the first cycle. The importance of thorough documentation has been pointed out

in the literature (for example in relation to increasing the dependability of the results (Eskola & Suoranta 1998: 212)) and it emerged as a central issue in our studies, too. As teacher-researchers we wanted to make our own roles in the interventions and data analyses explicit by keeping a journal of what was done and how our thinking processes were developing. We noticed the importance of documenting all changes made to the learning or research design, and the importance of documenting all thoughts about, and insights into, the events that happened in class as quickly as was possible. Furthermore, we learned that establishing a routine of going through the collected data while the course was still in progress would enable the research participants to confirm the analysis or to elaborate their thoughts. We also noticed that many of our reflections on the class or reactions to what had happened there, took place spontaneously with colleagues in the office or the coffee room. As those reflections are important autoethnographic data, it would be recommendable to develop a system for saving those thoughts for further use.

Finally, the criticism concerning DBR studies has also focused on the quality of the resulting theory. It has been said that the lack of commonly agreed standards concerning the point when a design that is not working should be abandoned can lead to "over-methodologized" studies which might only produce "mouse-like insights" (Dede 2004: 107–108). It has also been questioned whether this research approach differs from normal development work, and whether the results produced are simply common sense (Dede 2004: 107). We believe that it is important to understand that the results yielded through DBR should be evaluated based on the goals of this approach, and not compared with some other method or controlled experiments (Edelson 2002: 118; The Design-Based Research Collective 2003: 8; Wang & Hannafin 2005: 8). According to Edelson (2002: 112, 117) and Barab and Squire (2004: 5), the particularity of DBR is that its innovations and design principles should be informed by prior research and theory and guided by research goals. The goal of DBR is to create new theory, which should be sharable with others and usable in the sense that it provides a foundation on the basis of which learning designs can be developed and tested, practical problems solved and educational practices changed (Edelson: 2002: 112; The Design-Based Research Collective 2003: 5–7; Wang & Hannafin 2005: 8). Thus, when evaluating DBR studies, the most important criteria to be considered should be their innovativeness and usefulness. In other words, in the end, they should be evaluated by asking whether the generated theories are new and useful, and whether they lead to changes and improvements in educational practices. We hope that ours will.



## Endnotes

- 1) The examples with quotation marks are unedited direct quotes written in English by the student.
- 2) The examples which are not in quotation marks were written in Finnish by the student and have been paraphrased by the researcher.
- 3) Pseudonyms have been used for all participants.
- 4) Pseudonyms have been used for all participants.
- 5) All examples with quotation marks are direct, unedited quotations from the learners' questionnaire answers or blog entries written in English
- 6) Emphasis added by the researcher.
- 7) All examples without quotation marks were originally written in Finnish and have been paraphrased by the researcher.

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